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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/920,241	08/01/2001	Pierre Roo	MP0088	4034

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HARNES, DICKEY & PIERCE P.L.C.
5445 CORPORATE DRIVE
SUITE 200
TROY, MI 48098

EXAMINER

YUN, EUGENE

ART UNIT	PAPER NUMBER
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2618

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 09/920,241	Applicant(s) ROO, PIERTE	
	Examiner Eugene Yun	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-72 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-72 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 8-13, 16-21, 24-29, 32-37, 40-45, 48-53, 56-61, 64-69 and 72, are rejected under 35 U.S.C. 103(a) as being unpatentable over Dankberg (US 5,596,439) and Hardy (US 6,556,677) and further in view of Razavi et al. (US 6,606,489).

Referring to Claim 1, Dankberg teaches a communication circuit for a network transceiver, comprising:

A first sub-circuit having a first input which receives a composite differential signal including first and second differential signal components (see col. 4, lines 20-22 and input from Receiver to Interference Canceller in fig. 5), a second input which receives a differential replica transmission signal (see input from Source Information Signal in fig. 5), and an output which provides a differential receive signal which comprises the composite differential signal minus the differential replica transmission signal (see col. 4, lines 22-26).

Dankberg does not teach a second sub-circuit which produces first and second single-ended replica transmission signals which together substantially comprise a replica of the first differential signal component of the composite differential signal; and

A third sub-circuit, which is coupled to the first and second sub-circuits, and which produces the differential replica transmission signal from the first and second single-ended replica transmission signals.

Hardy teaches a second sub-circuit which produces first and second single-ended replica transmission signals which together substantially comprise a replica of the first differential signal component of the composite differential signal (see col. 4, lines 33-37 and lines 45-49); and

A third sub-circuit, which is coupled to the first and second sub-circuits, and which produces the differential replica transmission signal from the first and second single-ended replica transmission signals (see col. 4, lines 19-31).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Hardy to said device of Dankberg in order to provide improved echo cancellation.

The combination of Dankberg and Hardy does not teach the second sub-circuit is configured to generate a current signal, wherein the first differential signal component of the composite differential signal comprises the current signal, wherein voltage signals are derived in accordance with the current signal, and wherein the first and second single-ended replica transmission signals comprise the voltage signals. Razavi teaches the second sub-circuit is configured to generate a current signal, wherein the first differential signal component of the composite differential signal comprises the current signal (see col. 2, lines 19-29), wherein voltage signals are derived in accordance with the current signal, and wherein the first and second single-ended replica transmission

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signals comprise the voltage signals (see col. 2, lines 30-36). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Razavi to the modified device of Dankberg and Hardy in order to make more efficient use of supply current.

Claims 9, 17, 25, 33, 41, 49, 57, and 65 have similar limitations as claim 1.

Referring to Claims 2, 10, 18, 26, 34, 42, 50, 58, and 66, Hardy also teaches a fourth sub-circuit which is coupled to the first sub-circuit and which produces a time-shift between the first differential signal component of the composite differential signal and the second differential signal component of the composite differential signal (see col. 2, lines 59-65).

Referring to Claims 3, 11, 19, 27, 35, 43, 51, 59, and 67, Hardy also teaches the fourth sub-circuit comprising a delay circuit which introduces a delay in the first differential signal component relative to the second differential signal component (see col. 2, lines 59-65).

Referring to Claims 4, 12, 20, 28, 36, 44, 52, 60, and 68, Dankberg also teaches the third sub-circuit introducing a predetermined delay in the differential replica transmission signal relative to the first and second single-ended replica transmission signals from which the differential replica transmission signal is produced (see col. 4, lines 35-52).

Referring to Claims 5, 13, 21, 29, 37, 45, 53, 61, and 69, Dankberg also teaches the delay introduced by the fourth sub-circuit substantially matching the predetermined delay introduced by the third sub-circuit (see col. 4, lines 35-52).

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Referring to Claim 8, 16, 24, 32, 40, 48, 56, 64, and 72, Dankberg also teaches the first sub-circuit as a summer which operates to subtract the differential replica transmission signal from the composite differential signal (see col. 4, lines 22-26).

3. Claims 6, 7, 14, 15, 22, 23, 30, 31, 38, 39, 46, 47, 54, 55, 62, 63, 70, and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dankberg, Razavi, and Hardy and further in view of Chatterjee et al. (US 5,898,340).

Referring to Claim 6, the combination of Dankberg, Razavi and Hardy do not teach the first and second single-ended replica transmission signals as Class B signals. Chatterjee teaches the first and second single-ended replica transmission signals as Class B signals (see col. 1, lines 11-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Chatterjee to the modified device of Dankberg, Razavi, and Hardy in order to better improve power efficiency.

Claims 14, 22, 30, 38, 46, 54, 62, and 70 have similar limitations as claim 6.

Referring to Claim 7, Chatterjee also teaches the differential replica transmission signal produced from the first and second single-ended Class B replica transmission signals with a single operational amplifier (see col. 1, lines 11-25).

Claims 15, 23, 31, 39, 47, 55, 63, and 71 have similar limitations as claim 7.

Response to Arguments

4. Applicant's arguments with respect to claims 1-72 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Yun whose telephone number is (571) 272-7860. The examiner can normally be reached on 9:00am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on (571)272-4177. The fax phone


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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Eugene Yun
Examiner
Art Unit 2618

EY


Matthew Anderson
SPE 2618